WARZYN

PROJECT
10009700

REMEDIAL DESIGN/REMEDIAL ACTION

WORK PLAN

WINNEBAGO RECLAMATION LANDFILL SITE
(PAGEL'S PIT)
WINNEBAGO COUNTY, ILLINOIS

SEPTEMBER 1993

PREPARED BY:
WINNEBAGO RECLAMATION SERVICES, INC.
ROCKFORD, ILLINOIS

. . .

AND
WARZYN INC.
ADDISON, ILLINOIS

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Alan J. Schmidt, CPG
Project Manager

Sandra C. Ihm
Project Hydrogeologist

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INTRODUCTION

This Remedial Design and Remedial Action (RD/RA) Work Plan (RD/RA Work Plan) describes the overall approach to the RD/RA selected in the Record of Decision (ROD) for the Pagel's Pit Landfill Site (the Site, or the Winnebago Reclamation Landfill (WRL) Site) in Winnebago County, Illinois. The RD/RA Work Plan has been prepared by Winnebago Reclamation Services, Inc. (WRS) and Warzyn Inc. (Warzyn). The design and implementation of the remedial action will follow the ROD, the Statement of Work (SOW), the Consent Decree, the U.S. EPA Superfund RD/RA Guidance (U.S. EPA, 1986), and this RD/RA Work Plan. This Work Plan includes:

- A description of the project and background information
- A discussion of the components of the RA
- The planning documents required to execute the RD/RA
- The approach for preparing the RD and implementing the RA
- A summary of required reports and submissions during the RD/RA
- The schedule for RD activities and RA milestones
- The project organization and personnel responsibilities

The SOW requires the RD/RA Work Plan document the overall management strategy for performing the design, construction, operation, maintenance, and monitoring of the required remedial action (RA). Separate Remedial Design (RD) Work Plans will be prepared to address individual components of the RD/RA. The component RD Work Plans will describe how the major elements of the

remedy will be designed. Component RD Work Plans will be submitted for:

- Groundwater extraction and treatment system
- Final cover system
- Leachate and landfill gas management systems

Required companion planning documents have been or will be prepared to address activities that will be conducted in preparing the RDs and implementing the RAs at the WRL Site. These companion documents include the Site Access and Permitting Plan (SAPP), Quality Assurance Project Plan (QAPjP), Sampling Plan (SP), Health and Safety Plan (HASP), and Predesign Studies Plan. These planning documents are intended to cover activities required throughout the RD/RA process. However, additional procedures/protocols/methodologies/levels of protection may be required to support specific investigative, design, implementation, and/or monitoring activities stated in the respective RD/RA Work Plan. In such instances, the additional requirement(s) will be documented in the respective component RD Work Plan or RD.

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BACKGROUND INFORMATION

2.1 SITE DESCRIPTION

The WRL Site is an active solid waste landfill, which is permitted by the State of Illinois and which is owned and operated by WRS. The landfill itself occupies approximately 40 acres in the east central portion of Section 36, T43N, R1E and the west central portion of Section 31, T43N, R2E of the Third Principal Meridian. The WRL Site is located in Winnebago County in north central Illinois, approximately 5 miles south of the City of Rockford, in a predominantly rural unincorporated area. The Site is bounded on the west by Killbuck Creek and on the east by Lindenwood Road (Figure 1). Killbuck Creek, a perennial stream, merges with the Kishwaukee River about 2.5 miles northwest of the Site. The Kishwaukee River merges with the Rock River about 1.5 miles northwest of the confluence of Killbuck Creek and the Kishwaukee River.

The WRL Site is located on a topographic high between Killbuck Creek to the west and unnamed intermittent streams to the north and south. Surface topography in the vicinity of the Site consists primarily of an area of high relief resulting from the landfill waste disposal operations. The topography surrounding the landfill area is relatively flat to gently rolling. The ground surface ranges from approximately 790 ft mean sea level (MSL) on top of the landfill to approximately 706 ft MSL at Killbuck Creek just west of the landfill.

The landfill lies outside of the 100-year floodplain of Killbuck Creek, and is not within any designated wetland areas. The floodplain was established by the Federal Emergency Management Agency and field verified by the Illinois State Water Survey. A small wetland area south of the landfill was delineated by Encap, Inc. on November 5, 1990. This 3.73-acre jurisdictional wetland is rated low in quality. Further detail regarding the floodplain and wetland studies can be found in the Remedial Investigation (RI) and Feasibility Study (FS) reports for the site (Warzyn, March 1991).

Figure 2 is a current Site features map for the WRL Site. An active sewage sludge drying plant is located on the Site just north of the landfill. That facility is operated by NRG Technologies, Inc. (NRG). A small leachate collection pond is located on top of the landfill.

Land use around the WRL Site is a mix of industrial, agricultural, commercial, and rural residential. The Rockford Skeet Club is across Lindenwood Road to the northeast of the landfill. A septic tank pumping business is located to the west, a private hunt club to the southwest, and a limestone quarry to the northeast of the WRL Site. There are scattered residences within 1/2 mile of the WRL Site to the north, south, southwest, and southeast.

East of the WRL Site is the former Acme Solvent Reclaiming Inc. (Acme Solvent) NPL site. The Acme Solvent site is situated on approximately 20 acres (Figure 1), and was used from 1960 to 1973 for the disposal of solvent still bottoms and other liquid wastes into unlined lagoons and for drum stockpiling. The type, origin, and quantities of wastes disposed at the Acme Solvent Site are generally undocumented, but are known to have included solvent still-bottom sludges, nonrecoverable solvents, paints, and oils. Illinois Environmental Protection Agency (IEPA) inspections in late 1972 and early 1973 indicated the wastes in solvent lagoons at the Acme Solvent Site were covered with soil. An unknown number of on-site drums were crushed and buried, rather than removed (Ecology and Environment, 1983).

Significant remediation activities at the Acme Solvent Site commenced in August 1986 and were terminated in December 1986. These activities included remediation of nine waste mounds. Many of the mounds contained soil and/or sludge directly overlying weathered and fractured bedrock. The mounds were covered with native soil ranging in thickness from 1 to 10 ft. The soil/sludge was removed from the site for permanent disposal at permitted landfills. The excavations created by removing the original mounds were backfilled with native soil. In addition, soil adjacent to the excavations was recontoured, with the excess used to backfill the excavations. Approximately 40,000 tons of soil and/or sludge were removed from the site for disposal. As of mid-1992, approximately 6,000 tons of soil and/or sludge material and two tanks containing sludge remained on the Acme Solvent Site.

2.1.1 Site History and Operations

The landfill has been in operation since 1972 and the landfill has an estimated 5 to 7 years of capacity remaining at current filling rates. The landfill has an asphalt liner and a leachate collection system. A system of gas wells are used to extract landfill gas, which is used by NRG Technologies as a fuel for its municipal sludge dryer. Wastes accepted at the WRL Site are composed

primarily of municipal refuse and sewage treatment plant sludge from the Rock River Water Reclamation District (RRWRD) sewage treatment plant. The landfill accepted sewage treatment plant sludge (vacuum filter cake) from approximately 1977 to 1985. Since 1985, most of the sludge generated by RRWRD has been dehydrated at the NRG facility prior to disposal in the landfill. Non-dehydrated sludge has continued to be landfilled during periods in which the NRG facility is not operating or its capacity is exceeded. In addition to these wastes, a limited amount of Illinois special non-municipal wastes were disposed at the facility prior to December 1975 under permits issued by the IEPA. Not all of the special wastes permitted by the IEPA were actually received at the landfill (WRS, 1984). The landfill continues to receive limited quantities of non-hazardous special wastes such as foundry sand, LUST soils, POTW sludges and grinding dust, under permits issued by the IEPA.

2.1.2 Previous Investigations

The area of the WRL Site and the Acme Solvent Site has been the subject of a number of previous investigations, including:

- "Extent of Source of Groundwater Contamination - Acme Solvents Pagel's Pit Area Near Morristown, Illinois", Ecology and Environment, Inc., March 1983

- "Remedial Investigation, Acme Solvent Superfund Site, Winnebago County, Illinois", E.C. Jordan Company, September 1984

- "Preliminary Feasibility Study, Acme Solvent Superfund Site, Winnebago County, Illinois," E.C. Jordan Company, February 1985

- "Supplemental Investigation, Winnebago Reclamation Landfill, Rockford, Illinois", Warzyn Engineering Inc., March 1985

- "Data Analysis and Summary Report for Deep Groundwater Assessment, Acme Solvent Superfund Site, Winnebago County, Illinois," E.C. Jordan Company, May 1986

- "Supplemental Technical Investigation, Acme Solvent Superfund Site, Winnebago County, Illinois ", Harding Lawson Associates, February 1990

- "Northwest Area Investigation, Acme Solvent Superfund Site, Winnebago County, illinois," Harding Lawson Associates, October 1990

- "Remedial Investigation, Winnebago Reclamation Landfill, Rockford, Illinois." Warzyn Inc., March 1991

- "Feasibility Study, Winnebago Reclamation Landfill, Rockford, Illinois", Warzyn Inc., March 1991

Additionally, further data collection activities are continuing at the Acme Solvent Site in connection with the RD/RA at that site. Additional data collection activities are also ongoing in connection with the Southeast Corner Operable Unit at the WRL Site.

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PROPOSED REMEDY AND TECHNICAL APPROACH

On June 28, 1991, the U.S. EPA Regional Administrator signed the ROD for the first of potentially two operable units (OU) at the WRL Site. The second OU will address contaminated groundwater located in the Southeast Corner study area (Figure 2). The SOW outlines the scope of the RD/RA for the first OU to be executed by WRS. The major elements of the selected remedial action as presented in the SOW include:

- Identification of the extent of groundwater contamination
- Groundwater extraction and treatment system
- Leachate management system
- Landfill gas management system
- Final cover system
- Control of air emissions
- Groundwater, soil gas, leachate, air, and water supply monitoring
- Deed and access restrictions
- Alternate Water Supply

Implementation of the ROD for the individual RD/RA elements will be conducted as described in Section 3.1 through 3.9. The RD elements will be combined for RD purposes corresponding to the distinct components of the RA. It is anticipated that three separate component RDs and component RD Work Plans will be developed for:

- Groundwater extraction and treatment system (Groundwater RD)
- Leachate and landfill gas management system (Leachate and Gas RD)
- Final cover system (Final Cover RD)

The RA elements will be included within one of the three anticipated component RDs as discussed in Section 3.1 through 3.9. The three component RDs will be coordinated with each other for consistency with U.S. EPA requirements throughout the RD/RA process.

The Groundwater RD will address:

- Identification of extent of groundwater contamination (Section 3.1)
- Groundwater extraction and treatment system (Section 3.2)
- Control of air emissions (Section 3.6)
- Groundwater, air, and water supply monitoring (Section 3.7)
- Remedy component maintenance and access restrictions (Section 3.8)
- Alternative water supply (Section 3.9)

The Leachate and Gas RD will address:

- Leachate management System (Section 3.3)
- Landfill gas management system (Section 3.4)
- Control of air emissions (Section 3.6)
- Soil, gas, leachate, and air monitoring (Section 3.7)
- Remedy component maintenance and access restrictions (Section 3.8)

The Final Cover RD will address:

- Final Cover System (Section 3.5)
- Air monitoring (Section 3.7)
- Remedy component maintenance and access restrictions (Section 3.8)

3.1 IDENTIFICATION OF EXTENT OF GROUNDWATER CONTAMINATION

The SOW requires WRS to perform a groundwater investigation to define the extent of groundwater contamination and migration in the vicinity of the WRL Site, except for the Southeast Corner. This study will include an identification of the horizontal and vertical extent of contamination west, northwest, and southwest of the landfill (Figure 2).

This required work will be performed as a part of the Groundwater RD. The Groundwater RD Work Plan will include a discussion on the need and scope of additional groundwater investigations at the Site. The additional investigation activities will be coordinated with ongoing activities related to the Southeast

Corner study area to the maximum extent practicable, and will be used to support the Groundwater RD.

3.2 GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

3.2.1 Groundwater Extraction System

A groundwater extraction system will be designed to comply with the requirements set forth in the ROD, Consent Decree, and SOW. The purpose of the groundwater extraction system is to contain the leachate impacted groundwater plume within the Site boundaries and to cleanup portions of the plume that may be outside the Site boundaries (Figure 2).

The extraction system design will include a determination of the number of wells required, locations and depths of the wells, and pumping rates. The design will consider alternate pumping of wells and pulsed pumping to obtain the most efficient and economical method of operation to meet Site objectives. The results of additional studies, including definition of the extent of groundwater contamination, aquifer pump testing, and groundwater flow modeling, will be an integral part of the design of the extraction system.

3.2.2 Groundwater Treatment System

The extracted groundwater will be treated to achieve National Pollutant Discharge Elimination System (NPDES) requirements for discharge into Killbuck Creek. Groundwater treatment for organics will consist of air stripping, carbon adsorption, another treatment method approved by the U.S. EPA, or a combination of methods. Groundwater treatment for inorganics may be necessary to meet NPDES requirements, and will be evaluated as a part of the system design. Additional or supplemental treatment methods may be utilized, if approved by the U.S. EPA, to aid in groundwater cleanup. The U.S. EPA will make a determination of additional treatment methods based on the effectiveness and cost of available options.

3.2.3 Groundwater Cleanup Performance Standards and System Shutdown

The Groundwater Cleanup Performance Standards (GCPS) for system shutdown include Safe Drinking Water Act Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs). A cumulative carcinogenic risk of 10^{-5} and a cumulative hazard index (HI) of 1.0 will be used for 1,1 dichloroethene, arsenic, and other contaminants without MCLs or MCLGs. If the concentration found using this method is below background for any contaminant, background concentrations will be the GCPS for those contaminants. Background concentrations will be developed based on guidance

in U.S. EPA, December 1989 and applicable Illinois regulations. GCPS and the method for determining background concentrations will be developed as a part of the preliminary design for the groundwater extraction and treatment system as a part of the groundwater monitoring program. The EPA Document (EPA 230-R-92-014) Methods for Evaluating the Attainment of Cleanup Standards will be used, as appropriate, to assess whether cleanup standards have been attained.

The groundwater extraction and treatment system will be operated so that the GCPS are attained and will continue to be attained. Off-site groundwater extraction wells, if required, will be operated until the affected groundwater achieves and will continue to achieve GCPS. On-site groundwater extraction wells will be operated until it is demonstrated that all or a portion of the wells are not necessary to comply with the GCPS.

Demonstration of cleanup will be achieved when the GCPS are met for 3 consecutive years and it can be demonstrated that they will continue to be met in the future. A petition to shutdown all or a portion of extraction wells will document cleanup has been achieved and that further extraction system operation is not necessary for protection of human health and the environment. Upgradient groundwater concentrations, modelling of contaminant migration, and an evaluation of the treatment system for remaining extraction wells will be included in the petition. The U.S. EPA will make a determination based on the petition for shutdown.

WRS can petition the U.S. EPA to modify the GCPS if operation of the system for at least 5 years, including implementation of any U.S. EPA required modifications for at least 3 years, shows that it is technically impracticable to achieve the GCPS. A technical impracticability variance petition would be submitted to the U.S. EPA to change the GCPS in accordance with the SOW and the provisions of Section 121(d)(4)(C) of CERCLA.

3.3 LEACHATE MANAGEMENT SYSTEM

3.3.1 Leachate Extraction System

The *existing* leachate extraction system will be operated in the period prior to landfill closure. During this period, the leachate extraction system will be converted to the *final* system, which will be operated after closure. An *interim* leachate extraction system will be operated in the period before final landfill closure. The *leachate* extraction system will consist of leachate extraction with temporary pumps from existing gas wells and manholes in open portions of the landfill and the *final* system in portions of the landfill with the *final* leachate extraction system in place. The *final* leachate extraction system will be

constructed sequentially and within three months of construction of the final cover system on any portion of the landfill. The *existing*, *interim*, and *final* leachate extraction system will be operated to maintain a minimum head of leachate in the landfill.

The *final* leachate extraction system will utilize existing manholes connected to collection pipes at the base of the landfill and new or existing gas extraction wells as necessary to maintain the lowest technically practicable leachate level in the landfill. Dedicated leachate pumps equipped with automatic controls will be used to extract leachate from the selected extraction wells and manholes.

3.3.2 Leachate Pretreatment and Transport System

Extracted leachate from the existing, interim, or final leachate extraction systems will be discharged to the Rock River Water Reclamation District (RRWRD) publicly owned treatment works (POTW), unless a change in applicable rules or regulations prohibits such discharge or an equally effective alternate leachate treatment method is developed. The existing leachate aeration pretreatment system, or a U.S. EPA approved modification, will be used to treat the leachate prior to discharge. Modifications will be made to the leachate pretreatment system as necessary to meet POTW requirements. The discharge will be made to the POTW via a sanitary sewer service line from the WRL Site to existing sanitary collection lines.

The leachate pretreatment and transport system will use automatic controls to the maximum extent practicable. WRS will maintain frequent communication with the POTW and cooperate fully with POTW requests regarding leachate pretreatment and discharge requirements.

3.3.3 Shutdown of Leachate Management System

WRS may petition for shutdown of the leachate management system following completion of Remedial Action pursuant to paragraph 47 of the Consent Decree, if operation of the leachate management system is not required under Illinois landfill regulations or to meet GCPS.

3.4 LANDFILL GAS MANAGEMENT SYSTEM

3.4.1 Landfill Gas Extraction System

The *existing* interior landfill gas extraction system will be operated in the period prior to landfill closure. During this period, the landfill gas extraction system will be converted to the *final* system, which will be operated after closure. An *interim* landfill gas extraction system, consisting of existing gas extraction wells in open portions of the landfill and the final system in portions of the landfill, will be

operated in the period before final landfill closure. The *final* landfill gas extraction system will be constructed sequentially and within three months of construction of the final cover system on any portion of the landfill.

New wells will be installed following attainment of final fill elevations in areas where gas extraction currently is not being performed. Existing wells will be replaced or extended while landfill elevations are raised. Gas extraction wells to be used for leachate extraction will be installed to within 5 to 10 ft of the liner, based on available liner elevation data. Wells will be spaced to minimize the amount of gas not captured within the waste area and to prevent landfill gas from leaving the waste areas. A perimeter gas management system will be included if the U.S. EPA determines that the active interior landfill gas extraction system does not adequately prevent landfill gas from exiting the waste areas. The interior gas extraction system will be designed and operated to minimize the volume of ambient air drawn through the system to optimize the BTU value of the extracted gas.

3.4.2 Landfill Gas Treatment System

The existing gas treatment system will be maintained and expanded as necessary to provide treatment of extracted landfill gas. Landfill gas will continue to be used as a fuel source for the sludge drying operation or flared during downtime of the sludge drying operations.

In the case of a gas management system shutdown of the sludge drying operation, landfill gas will be disposed of by flaring.

3.4.3 Shutdown of Landfill Gas Management System

WRS may petition for shutdown of the landfill gas management system following completion of Remedial Action pursuant to paragraph 47 of the Consent Decree, if operation of the landfill gas management system is not required under Illinois landfill regulations or to meet GCPS.

3.5 FINAL COVER SYSTEM

Prior to construction of the final cover system at the Site, the landfill will be operated in full compliance with applicable Illinois landfill regulations. WRS will place wastes to allow the landfill to be sequentially built up to planned final grades. The final landfill cover will be constructed sequentially and will be initiated when no more than 25% of the surface area (approximately 10 acres) reaches final elevations. The design for the final cover system will be completed prior to the time filling is projected to have reached final elevations over 25% of the surface area. Construction of the final cover system on a sequential unit shall

commence no later than 60 days after placement of the final lift of solid waste in that unit, unless delayed by weather.

The final cover system will be designed, constructed, and maintained for any closed unit in accordance with the provisions and requirements of existing permits and 35 IAC 811 or any subsequently promulgated applicable regulations that may be more protective. The final cover, in accordance with 35 IAC, 811,110(b) and (c), 811,314, 811.322, 811.503(a)(6), and 812,313, will consist of a low permeability layer followed by a final protective layer, and will have final slopes at a grade capable of supporting vegetation, limiting erosion, and preventing accumulation of water on the cover.

3.6 CONTROL OF AIR EMISSIONS

WRS will control air emissions so that they will not exceed a cumulative cancer risk of 10^{-5} at the nearest downwind receptor, using risk calculation methods set forth in U.S. EPA, December 1989. Additionally, air emissions will not exceed any applicable Federal, State, or local regulations. Air treatment system residuals will be discharged according to applicable regulations. Air emissions potentially subject to monitoring and, if required, control include emissions from the landfill waste disposal area, emissions from leachate pretreatment, and from groundwater treatment. Air emissions will be addressed as a part of the appropriate component design.

3.7 GROUNDWATER, SURFACE WATER, SOIL GAS, LEACHATE, AIR, AND WATER SUPPLY MONITORING

Monitoring will be performed in accordance with the requirements of Illinois regulations for landfills and the SOW. Monitoring plans will be developed as a part of the component RD. The elements of the monitoring plan will be designed as part of the appropriate component designs as described in this Section.

3.7.1 Groundwater Monitoring

A groundwater monitoring program will be developed during the Groundwater RD. The groundwater monitoring program will be implemented as a part of the RA. Groundwater monitoring will include collection of samples for laboratory analyses and measurement of groundwater elevations at specified wells. The

groundwater monitoring program will be designed to:

- Monitor the performance of the proposed groundwater extraction and treatment system
- Detect changes in contaminant concentrations at the Site boundary (Figure 2), other than the Southeast Corner
- Determine that the extraction system is preventing movement of leachate impacted groundwater downgradient of the extraction zone
- Determine whether the groundwater is being contaminated by releases from the waste disposal area
- Establish background groundwater quality to aid in developing GCPS
- Evaluate groundwater cleanup for system shutdown

3.7.2 Surface Water Monitoring

A surface water monitoring program will be developed as part of the groundwater RD. The groundwater monitoring program, which will include surface water monitoring, will be implemented as a part of the RD. The surface water monitoring program will monitor the quality of water in Killbuck Creek. Surface water monitoring will include collection of samples for laboratory analysis and measurement of surface water elevations at specified locations. The surface water monitoring program will be designed to detect the presence of contaminant concentrations in Killbuck Creek.

3.7.3 Soil Gas Monitoring

A soil gas monitoring program will be developed as part of the Leachate and Gas RD Work Plan. The soil gas monitoring program will be implemented following U.S. EPA approval of the Leachate and Gas RD Work Plan. The soil gas monitoring program will be designed to determine the effectiveness of the landfill gas management system. The soil gas monitoring program will include gas monitoring devices located around the waste disposal area. The gas monitoring devices will be placed at locations and elevations to determine if landfill gas is migrating between the ground surface and the base of the landfill liner. Soil gas monitoring parameters and schedules will be prepared according to 35 IAC 811.310(c) and (d) and 812.309. A proposal will be developed for below grade gas monitoring devices within the waste boundary in accordance with 35 IAC. 811.310(b)(1).

3.7.4 Leachate Monitoring

A leachate monitoring program will be developed during the Leachate and Gas RD. The leachate monitoring program will be implemented as a part of the RA. The leachate monitoring program will be designed to detect changes in leachate characteristics over time and to comply with POTW discharge monitoring requirements. Leachate monitoring will be conducted, and leachate monitoring parameters and schedules will be prepared based on 35 IAC, Part 721, Subpart C and Sections 722.111, 810.103, 811.202, 811.309(g), 811.319(a)(1)(c)(ii), and 812.308(a)(4).

3.7.5 Air Monitoring

Air monitoring programs will be developed, as required, during the component RDs, with reference to 35 IAC, 811.310(c) and (d) and 812.309. Air monitoring will be implemented as a part of the RA. The air monitoring program will include:

- A minimum of three ambient air monitoring locations downwind of the waste disposal unit no more than 100 ft from the edge of the waste disposal area. These monitoring locations will be included in the Final Cover RD.

- At least one ambient air monitoring location downwind of any leachate pretreatment system that could result in transfer of volatile compounds into the air, if the pretreatment is not located within the waste disposal area. These monitoring locations, if required, will be included in the Leachate and Gas RD.

- At least one ambient air monitoring location downwind of groundwater treatment systems that could result in transport of volatile compounds into the air. These monitoring locations, if required, will be included in the Groundwater RD.

3.7.6 Water Supply Monitoring

If an alternate water supply is required, as described in Section 3.9, a water supply monitoring program will be developed for any water treatment units required. Sampling and analysis will be performed at least quarterly to determine that the discharge from the treatment unit meets requirements for a drinking water supply. If an alternate water supply is developed that does not include home treatment units, assurance will be provided to show that the alternate water supply meets the requirements of a drinking water supply. Any impacted water supply wells, that are not abandoned, will be sampled and analyzed quarterly. Copies of analytical results will be furnished to the principal users of the alternate water supply.

3.8 REMEDY COMPONENT MAINTENANCE AND ACCESS RESTRICTIONS

Maintenance procedures will be addressed as a part of the O&M Plan for the component RDs. WRS will provide necessary maintenance for the remedial systems designed, constructed, and operated in accordance with the provisions of the Consent Decree, SOW, this RD/RA Work Plan, and the component RD Work Plans.

Existing security measures will be maintained at the Site to restrict access. These restrictions will protect the integrity of the final cover system, and will prevent interference with O&M of the groundwater, gas, and leachate extraction, treatment, transport, and monitoring systems required by the RA.

3.9 ALTERNATE WATER SUPPLY

If the U.S. EPA determines the source of a property owner's water supply contamination might be due to the WRL Site activities, WRS will provide a temporary water supply approved by the U.S. EPA and will conduct an investigation to determine the source of the contamination. Investigation will be completed within 4 months, or an extended time period agreed upon by the parties involved. If the U.S. EPA determines, as a result of the investigation, the source of contamination is the WRL Site and an alternate water supply is needed, WRS will provide a long-term alternate water supply system approved by the U.S. EPA.

An alternate water supply will be required by WRS if the existing water supply, as a result of WRL Site activities, contains contaminants at levels exceeding a cumulative carcinogenic risk of 10^{-5} or contains any contaminant at a concentration greater than the Safe Drinking Water Act MCL or non-zero MCLG. Additionally, the concentration determined in this manner will not be set below naturally occurring background levels determined for the Site. The alternate water supply will be approved by the U.S. EPA. WRS will provide necessary operation, maintenance, and monitoring of required alternate water supply system(s) to meet the requirements listed here.

The required alternate water supply would be provided at least until the original water supply meets the requirements listed here for a period of 3 consecutive years. If the original water supply is utilized again, it would be monitored quarterly for at least 5 years to confirm the requirements are continuing to be met.

4

RD/RA PLANNING DOCUMENTS

The SOW requires the RD/RA Work Plan include:

- Site Access and Permitting Plan (SAPP)
- Quality Assurance Project Plan (QAPjP)
- Sampling Plan (SP)
- Health and Safety Plan (HASP)
- Predesign Studies Plan

The RD/RA planning documents have been prepared as general specifications or guidelines for RD/RA implementation, and will be used to the maximum extent practicable for each of the component work plans. Amendments or attachments to this RD/RA Work Plan or individual planning documents will be prepared, as appropriate, for the component RD work plans. Separate planning documents will be prepared for the component RD work plans, if necessary.

4.1 SITE ACCESS AND PERMITTING PLAN

4.1.1 Site Access

Site access will be provided by WRS for activities related to the RD/RA. The majority of activities will be conducted on property owned by WRS, and access agreements for these activities are not required. WRS will provide access for required personnel during the RD/RA for on-site activities. Groundwater investigation activities may require access to property west of Killbuck Creek not owned by WRS. WRS has access to neighboring properties for implementation of the RD/RA.

4.1.2 Permitting

Section 121(e) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), states that no Federal, State, or local permit shall be required for the portion of any remedial action conducted entirely on-site. On-site is defined to include the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action. This exemption only applies to the administrative requirements (e.g., approval and issuance of permits, documentation, reporting, and recordkeeping) that the permits enforce. Substantive requirements (e.g., health- or risk-based restrictions, technology-based requirements, and location restrictions) must be met for remedial actions conducted entirely on-site. Remedial actions conducted off-site must obtain all necessary permits and comply with both the administrative and substantive requirements of the permit.

At each design phase, permit requirements will be identified for on-site and off-site portions of the remedy. On-site portions of the remedy will be designed to meet the substantive requirements of the identified permits. Permitting authorities will be contacted, as appropriate, to discuss substantive requirements for on-site portions of the remedy. At this time, it is anticipated that on-site activities required to fulfill substantive permit requirements include:

- Illinois landfill regulations (35 IAC 811)
- Illinois floodplain construction permits (Illinois revised statutes, Chapter 19, Paragraph 65 (f))
- National Environmental Policy Act, wetlands and floodplains, and fish and wildlife (40 CFR 6)
- 404 permit-dredge and fill in floodplains

Off-site activities anticipated to require permits include:

- Clean Water Act NPDES administered permit program and standards (40 CFR 122 and 125)
- Illinois NPDES permit regulations (35 IAC 309)
- Illinois organic air emission standards (35 IAC 215)
- Illinois pretreatment programs (35 IAC 310)

Approximate time frames for obtaining permits will be established as soon in the design process as possible to determine potential impact on remedial construction and/or implementation. The permitting process will be undertaken as soon as practicable to minimize the impact, if any, on remedial construction and implementation.

4.2 QUALITY ASSURANCE PROJECT PLAN

This RD/RA Work Plan includes a site-specific RD/RA Quality Assurance Project Plan (RD/RA QAPjP) that is being submitted under separate cover. The RD/RA QAPjP establishes QA/QC procedures for the precision and accuracy of the data collected during RD/RA investigation, monitoring, and construction. Component-specific QAPjP requirements that may not be addressed in the RD/RA QAPjP will be developed and submitted with each component RD work plan or RD to cover RD/RA sampling activities. Each component RD work plan or design will identify component-specific QAPjP issues or will identify that the RD/RA QAPjP is sufficient for that component's sampling needs.

The RD/RA QAPjP presents the organization, objectives, functional activities, and specific analytical QA and QC activities associated with RD/RA for the WRL Site. The RD/RA QAPjP will be prepared in accordance with the Consent Decree, U.S. EPA's Interim Guidelines and Specifications for Preparation of Quality Assurance Project Plans (QAMS-005/80), and the Model QAPjP for U.S. EPA Region V. The provisions for the Southeast Corner Operable Unit QAPjP have been used, to the extent practicable, for the RD/RA QAPjP.

The RD/RA QAPjP and its addendums will include:

- Project description
- Project organization and responsibility
- QA objectives
- Sampling procedures
- Sample custody
- Equipment calibration procedures and frequency
- Analytical procedures

- Data reduction, validation, and reporting
- Internal QC checks
- Performance and system audits
- Preventive maintenance
- Procedures to assess data precision, accuracy, representativeness, completeness, and comparability
- Corrective action
- QA reports to management

4.3 SAMPLING PLAN

A Sampling Plan (SP) will be prepared to define sampling activities associated with each component RD or RA. The SPs will describe the sampling program and the procedures and practices to be used in obtaining data in accordance with the Consent Decree and SOW. These procedures include a description of the sample designation system, personnel and their responsibilities, and sampling methods including quality assurance and quality control (QA/QC) procedures to be employed.

4.4 HEALTH AND SAFETY PLAN

This RD/RA Work Plan includes a site-specific RD/RA Health and Safety Plan (RD/RA HASP) that is being submitted under separate cover. The RD/RA HASP is designed to protect on-site personnel from potential physical, chemical, and other hazards during required RD/RA activities. The RD/RA HASP follows U.S. EPA guidance and OSHA requirements as outlined in 29 CFR 1910.120 (51 FR 45654). Separate health and safety issues associated with components of the RD/RA may require modification of the comprehensive RD/RA HASP. These specific health and safety issues will be identified and addressed as part of each component RD.

The RD/RA HASP and its addendums will include:

- Description of the WRL Site, including location, facility description, status of operations, Site map, Site history, surrounding land uses, and climatic information
- Documentation associated with plan development, approval, revisions, and subsequent approvals, including dates and signatures
- Description of field tasks
- Summary of relevant chemical contaminants by medium
- Hazard analyses
- Hazard mitigation procedures
- Personnel protective equipment (PPE)
- Action levels for upgrading PPE
- Site control and work zones
- Personal decontamination procedures
- Site resources
- Emergency equipment
- Emergency telephone numbers
- Emergency routes
- Contingency plans
- Project personnel and safety plan distribution

4.5 PREDESIGN STUDIES PLAN

The SOW requires a Predesign Studies Plan to supplement available technical data as necessary to implement the RA. The predesign studies required as part of the RD process include:

- Identification of the extent of groundwater contamination in the vicinity of the western site boundary exceeding the cleanup standards set forth in the SOW

- Treatability studies for groundwater treatment, if U.S. EPA determines such studies to be necessary

- Additional studies necessary for proper design of any elements of the RA

Each component RD Work Plan will identify and outline predesign studies required to support the component RD. The Predesign Studies Plan(s) will present detailed descriptions of the testing and (if required) treatability study activities that will be conducted during predesign. Data collected during the predesign studies will be presented in a predesign studies report at the conclusion of the predesign studies. The findings of predesign studies will be incorporated into the respective component RDs.

5

REMEDIAL DESIGN

Design Plans and Specifications will be prepared for each component RD to accomplish the recommended RA defined in the ROD, Consent Decree, and SOW. Design Plans and Specifications will be developed and submitted for U.S. EPA review as requested by the U.S. EPA. It is anticipated that designs will be submitted in three phases: preliminary design, prefinal design, and final design. An intermediate design phase submittal may be required by the U.S. EPA, depending upon the preliminary design. The Consent Decree and SOW recognize that the intermediate design submittal may not be required, which is supported by the U.S. EPA RD/RA Guidance (U.S. EPA 1986). The level of effort required for these design phases is described in Sections 5.1 through 5.4.

Each design submittal will include additional project design documents required by the SOW. The content of the project design documents are discussed in Section 5.5. Design submittals will be revised for each design phase to reflect U.S. EPA comments and the more detailed design documents being developed.

Design packages will be submitted to the U.S. EPA for the distinct components of the RA. It is anticipated that three separate designs will be prepared:

- Groundwater extraction and treatment system (Groundwater RD)
- Leachate and landfill gas management systems (Leachate and Gas RD)
- Final cover system (Final Cover RD)

The RA elements outlined in the SOW and Section 3 will be incorporated into the component RDs. Section 3 explains the anticipated relationship between the required elements of the SOW to the component RDs.

5.1 PRELIMINARY DESIGN

The RD will be approximately 30% complete for the preliminary design phase. This submittal will present the functional aspects of the RD covering conceptual design configurations, strategies, compliance with ARARs, and assumptions. This design phase will serve to confirm that the RDs address the intent of the U.S. EPA's SOW, that the technical requirements of the project are being addressed, and that the final design will provide a constructable and operable RA.

The preliminary design submittal will include conceptual plans showing the major aspects of the design component, preliminary design calculations, and preliminary technical specifications.

5.2 INTERMEDIATE DESIGN

The RD will be approximately 60% complete for the intermediate design phase. At this phase, the plans and specifications will be clearly outlined. Conceptual layouts will be revised and refined from the preliminary design for the positioning of the site remedial action components. The intermediate design will fully address comments made to the preliminary design.

The Pagel's Pit Site ROD has outlined a straight forward and proven approach for extraction and treatment of groundwater and site monitoring. In addition, the remaining components of the ROD are requirements for landfill operation and closure in accordance with Illinois regulations. It is likely that a U.S. EPA review at the intermediate design phase will not be necessary. The intermediate design phase submission to the U.S. EPA will be optional, based upon review of the preliminary design by the U.S. EPA.

The intermediate design submittal, if required by the U.S. EPA, will include:

- Drawing set with Site plans, cross sections, profiles, and details
- Construction specifications and technical design report
- Completed and checked calculations
- Completed peer review to confirm project approach and scope requirements are being satisfied
- Construction Quality Assurance Plan (CQAP)

- Operation and Maintenance (O&M) Plan with an O&M QAPjP and Field Sampling Plan (FSP)

5.3 PREFINAL DESIGN

Revised design plans and specifications will be submitted when the design effort is approximately 95% complete for the prefinal design phase. At this stage, the U.S. EPA will be able to confirm compliance, usability, and constructability of the RA. The U.S. EPA may waive the requirement for a prefinal design submittal if the previous design demonstrates that the prefinal submittal is not necessary. It is anticipated that the U.S. EPA will require either the intermediate or the prefinal design submission.

The prefinal design will address comments made to the preceding design submittal. The prefinal design submittal, if required by the U.S. EPA, will include the components listed for the intermediate design in prefinal form, and

- Supporting data and documentation defining the functional aspects for the project.
- Required permits or applications for permits not yet received and correspondence with permitting authorities regarding off-site activities
- A description of how substantive permit requirements will be fulfilled and correspondence with permitting authorities regarding on-site activities
- Construction schedule
- Construction and O&M cost estimate

5.4 FINAL DESIGN

After approval of the preceding design submission, the required revisions will be executed and the final documents will be submitted 100% complete with reproducible drawings and specifications ready for construction. The final design submission will fully address comments made to the preceding design submittal. Warzyn and WRS will provide drawings that are consistent with specifications throughout the final design.

The final design will address commends made to the preceding design submittal. The final design submittal will include the components listed for the intermediate and prefinal design, in final form.

5.5 PROJECT DESIGN DOCUMENTS

Various project design documents will be developed and submitted with the preliminary, intermediate (if required), prefinal (if required), and final design submittals as identified for each submittal in Section 5.1 through 5.4. The project design documents developed for each design phase will reflect the level of completion of the design phase, and will be final for the final design submittal. The project design documents for the RD, as required by the SOW, include:

- Design Plans and Specifications
- Construction Quality Assurance Plan (CQAP)
- O&M Plan with an O&M QAPjP and FSP
- Construction schedule
- Construction cost estimate

The RD/RA HASP will be reviewed as a part of each design submission to verify site workers safety during the RA. If revisions to the RD/RA HASP are determined to be necessary, the design submittals will include an addendum or attachment to the RD/RA HASP.

5.5.1 Design Plans and Specifications

The Design Plans and Specifications at each design phase will include a discussion of the design strategy and design basis, including:

- Compliance with applicable or relevant and appropriate environmental and public health laws, rules, regulations, and standards

- Minimization of environmental and public health impacts

The technical factors of importance to the design and construction will be discussed including:

- Use of currently accepted environmental control measures and technology

- Constructability of the design

- Use of currently accepted construction practices and techniques

The design of the groundwater extraction system will include the following:

- Number of extraction wells required
- Location of extraction wells
- Pumping rates
- Method used for operating the system

Groundwater modeling, using a computer program (e.g., Quickflow, Flowpath, Modflow) may be used in the design of the groundwater extraction system.

- Description of assumptions and rationale for assumptions

- Discussion of possible sources of error and references to possible operation and maintenance problems

The Design Plans and Specifications will include the following components as required for the individual design phase:

- Detailed drawings for the proposed design

- Tables listing necessary equipment and equipment specifications

- Appendices showing sample calculations, derivation of essential equations, and results of laboratory or field tests

5.5.2 Construction Quality Assurance Plan (CQAP)

A Construction Quality Assurance Plan (CQAP) will be developed so that the construction effort complies with the RD Plans and Specifications. The CQAP will be a facility-specific document and will include, at a minimum, the following items:

- Description of responsibility and authority of the organizations and personnel involved in the construction of the Remedial Action

- Construction quality assurance personnel qualifications

- Scope and frequency of construction observation activities

- Sampling and testing requirements

- Description of documentation and reporting requirements for construction quality assurance activities

The CQAP will be submitted with the intermediate (if required), prefinal (if required), and final design submittals.

5.5.3 Operation and Maintenance (O&M) Plan

The O&M plan will include a description of the normal O&M tasks necessary for operation and maintenance of the various remedial actions, a description of potential operating and maintenance problems, a description of alternative procedures to prevent releases of hazardous substances, a description and schedule of corrective actions to be implemented if discharge requirements are exceeded, a description of safety precautions, equipment descriptions, and recording requirements.

The O&M Plan will also include an O&M QAPjP, with a FSP, describing the sampling and data collection requirements, required laboratory tests, monitoring locations, frequency, and rationale used to determine compliance with cleanup standards, and monitoring trigger mechanisms for system shutdown. The O&M QAPjP will indicate areas of responsibility and authority, personnel qualifications, anticipated construction observation activities, anticipated sampling and testing requirements, and a description of the construction record documents.

The O&M Plan will be submitted with the intermediate (if required), prefinal (if required), and final design submittals.

5.5.4 Project Schedule

The project schedule in this RD/RA Work Plan (see Section 8) will be revised for each design phase to reflect U.S. EPA comments and the more detailed Project Design Documents being developed. If updated, the project schedule will be submitted with the preliminary, intermediate (if necessary), prefinal (if necessary), and final design submittals or with the monthly progress report, along with a discussion of any delays, actual or anticipated.

5.5.5 Capital and Operating and Maintenance Cost Estimate

WRS will modify the cost estimate developed in the Consent Decree to reflect the estimated construction cost represented by the Design Plans and Specifications. The cost estimate will include both capital and O&M costs. The cost estimate will refine the estimate provided in the feasibility study to reflect the more detailed Project Design Documents being developed. Cost estimates will be submitted with the prefinal (if required), and final design submittals.

6

REMEDIAL ACTION IMPLEMENTATION

RA implementation will begin after approval of the Final Design Submittal for each of the component RDs. Construction of the groundwater extraction and treatment system will begin as specified in the master RD/RA Work Plan and Groundwater RD Work Plan schedules, as modified during the Groundwater RD. Construction of the final landfill cover, the gas management system, and leachate management system will be coordinated with projected operation and closure of the operating landfill.

6.1 CONSTRUCTION OBSERVATION

Construction observation activities throughout the RA construction will verify the RA is constructed according to the U.S. EPA-approved plans and specifications and is in compliance with environmental requirements and health and safety procedures. The necessary staff will be provided to successfully manage, sample, observe, and record the RA construction activities and the implementation of the CQAP.

6.2 CONSTRUCTION INSPECTION AND MEETINGS

A preconstruction site walk-over and meeting, a prefinal site walk-over, and a final Site walk-over will be conducted by WRS, their representatives, the U.S. EPA, the RA contractor, and the IEPA.

The preconstruction site walk-over and meeting will include:

- Review of methods for documenting and reporting construction observation data and distributing and storing documents and reports

- Review of work area security and safety protocols

- Discussion of any modifications to the CQAP, if necessary, because of previously undetermined site considerations

- Site walk-over by all parties to verify that design criteria, and plans and specifications, are understood

The prefinal site walk-over and meeting will occur after construction activities are essentially complete and the RA systems have been operationally tested. The tasks will consist of a walk-over of the entire facility to determine if the project is complete and consistent with the final RD. Outstanding construction deficiencies will be identified and noted. A prefinal inspection report will be developed outlining any construction deficiencies and the proposed action and completion date for correcting these deficiencies.

A final site walk-over and meeting will be conducted after any construction deficiencies noted during the prefinal meeting are resolved. The final meeting will consist of a site walk-over and will focus on those items previously determined to be deficient.

6.3 REMEDIAL ACTION REPORT

A Remedial Action Report will be generated if required. The purpose of the Remedial Action Report is to document activities which have occurred under the WRL Remedial Action. The Remedial Action Report will contain the following elements:

- Introduction
- Chronology of events
- Performance standards and construction quality control
- Construction activities
- Final inspection
- Certification that remedy is operational and functional
- Operation and maintenance
- Summary of project costs

6.4 COMPLETION OF CONSTRUCTION REPORT

Upon completion of project construction, a Completion of Construction Report will be submitted to the U.S. EPA. The report will be submitted in draft and final forms, and will include:

- A synopsis of the remedial action component and description of the design and construction activities
- Explanation of any modifications to the plans and why they were necessary
- Listing of the criteria, established before the RA was initiated, for judging the functionality of the RA
- Explanation of the operation and maintenance to be performed at the facility
- Certification that the construction has been completed in a manner consistent with design specifications, and that components are performing adequately

6.5 OPERATION AND MAINTENANCE

Operation and maintenance (O&M) of the groundwater extraction and treatment system, leachate management system, landfill gas management system, final cover, air emissions control systems (if any), site security systems, and monitoring systems will be implemented in accordance with the standard operating procedures and maintenance requirements contained in the U.S. EPA-approved final O&M plans. The duration of remedy components will be as required in the SOW and Consent Decree.

6.6 MONITORING

Monitoring during RA and O & M will include:

- Groundwater monitoring to monitor the performance of the groundwater extraction and treatment system for containing affected groundwater within the WRL Site boundaries, and (if required) remediating groundwater outside the Site boundaries.

- Surface water monitoring to detect the presence of any contaminant concentrations in Killbuck Creek

- Leachate monitoring to detect changes in leachate characteristics, and for compliance with requirements by the publicly owned treatment works (POTW) where leachate is being discharged

- Soil gas monitoring to measure the effectiveness of the landfill gas management system.

- Air monitoring to measure attainment of the air emissions standards set forth in the ROD and the SOW.

- Water supply monitoring of raw and treated water for water treatment units that may be required as a part of a potential alternate water supply

Monitoring will be conducted in accordance with the respective designs for these monitoring systems and the Field Sampling Plans. The duration of the O&M monitoring systems will be as required in the SOW.

7

REPORTS AND SUBMISSIONS

The following reports will be submitted to the U.S. EPA for each of the component RDs described in Section 3 during the RD/RA:

- Design Plans and Specifications for Preliminary Design
- Design Plans and Specifications for Intermediate Design (if required)
- Design Plans and Specifications for Prefinal Design (if required)
- Design Plans and Specifications for Final Design
- Construction Quality Assurance Plan
- Operation and Maintenance Plan
- Construction schedule
- Capital and O&M Cost Estimate
- Prefinal Inspection Report
- Completion of Construction Report

A full description of these reports is included in Section 5 and Section 6 of this RD/RA Work Plan. The schedule for submittal is discussed in Section 8 and Figure 3.

In addition to the reports listed above, monthly progress reports during the design and construction phases and quarterly progress reports during O&M activities will be prepared. These progress reports will include:

- A description of the actions that have been taken toward achieving compliance with the Consent Decree and SOW and attached copies of appropriate supporting documentation

- A summary of results of sampling, testing, laboratory analysis, and other data received during the course of the work that passed QA/QC procedures, as well as copies of daily reports (if requested) and inspection reports.

- A description of deviations from the approved work plans, drawings, or specifications

- A description of contacts with representatives of the local community, public interest groups, or state government.

- A description of problems or potential problems encountered during the reporting period and actions taken or being taken to rectify problems

- A description and estimate of the percentage of the RD/RA completed, including unresolved delays encountered or anticipated that may affect the project schedule

- A description of the projected work, including documents to be submitted during the next reporting period

- A description of any changes in personnel

- A modified project schedule that reflects delays and/or changes in the project's scope

- A *quarterly* update of landfill capacity including estimated quantity of fill material, incremental quantity of fill from the previous report, and estimated remaining capacity

- An *annual* confirmation and adjustment, if necessary, of the quantity of total fill, based on an annual survey of the landfill

8

SCHEDULE

Figure 3 graphically depicts an overall schedule for the WRL Site RD/RA. The schedule in Figure 3 assumes the U.S. EPA will require preliminary, prefinal, and final design submittals, and is based on Warzyn's experience with design of similar projects. The schedule also assumes 45-day review time by the U.S. EPA. Review periods greater than 45 calendar days will change the dates associated with following activities, and will not be counted against WRS for purposes of stipulated penalties. The duration of activities specified for the design phases depends upon the U.S. EPA's decision regarding intermediate and prefinal design submittal requirements. For example, if the intermediate design submission is waived by the U.S. EPA, the prefinal design submission would be prepared following receipt of preliminary design submission comments from the U.S. EPA.

The schedule (Figure 3) will be updated and revised as necessary in accordance with procedures outlined in the Consent Decree, and submitted with the monthly progress report when warranted. More detailed design schedules and construction and operation schedules for the remedies will be developed as a part of the component RD Work Plans.

9

PROJECT ORGANIZATION AND RESPONSIBILITY

Figure 4 presents the proposed project team and structure for the RD/RA. The team includes qualified technical management, engineering design, treatability studies, field investigation, and support staff with significant experience with the specific remedy components required by the SOW for this project. Team personnel have direct experience with previous investigations and engineering evaluations associated with the WRL Site, have existing relationships with regulatory and other officials with respect to the project, have experience in Illinois landfill regulatory compliance, and have recent applicable experience and technical expertise with other RD/RA projects under CERCLA. Project personnel and responsibilities will be identified in the respective component RD Work Plans and remedial design documents.

10

REFERENCES

U.S. EPA, *Consent Decree for Remedial Design and Remedial Action, Pagel's Pit Site, Winnebago County, Illinois,* August 5, 1992 version

U.S. EPA, *Record of Decision, Pagel's Pit Site, Winnebago County, Illinois,* June 28, 1991

U.S. EPA, *Risk Assessment for Superfund, Volume I, Human Health Evaluation Manual (Part A),* December 1989

U.S. EPA, *Statement of Work for Remedial Design and Remedial Action, Pagel's Pit Site, Winnebago County, Illinois,* August 3, 1992 version

U.S. EPA, *Superfund Remedial Design and Remedial Action Guidance,* OSWER Directive 9355.0-4A, June 1986

Warzyn Inc., *Remedial Investigation Report, Winnebago Reclamation Landfill, Rockford, Illinois,* March 1991 (2 volumes)

Warzyn Inc., *Feasibility Study Report, Winnebago Reclamation Landfill, Rockford, Illinois,* March 1991

SCI/rcs/AJS/DWH
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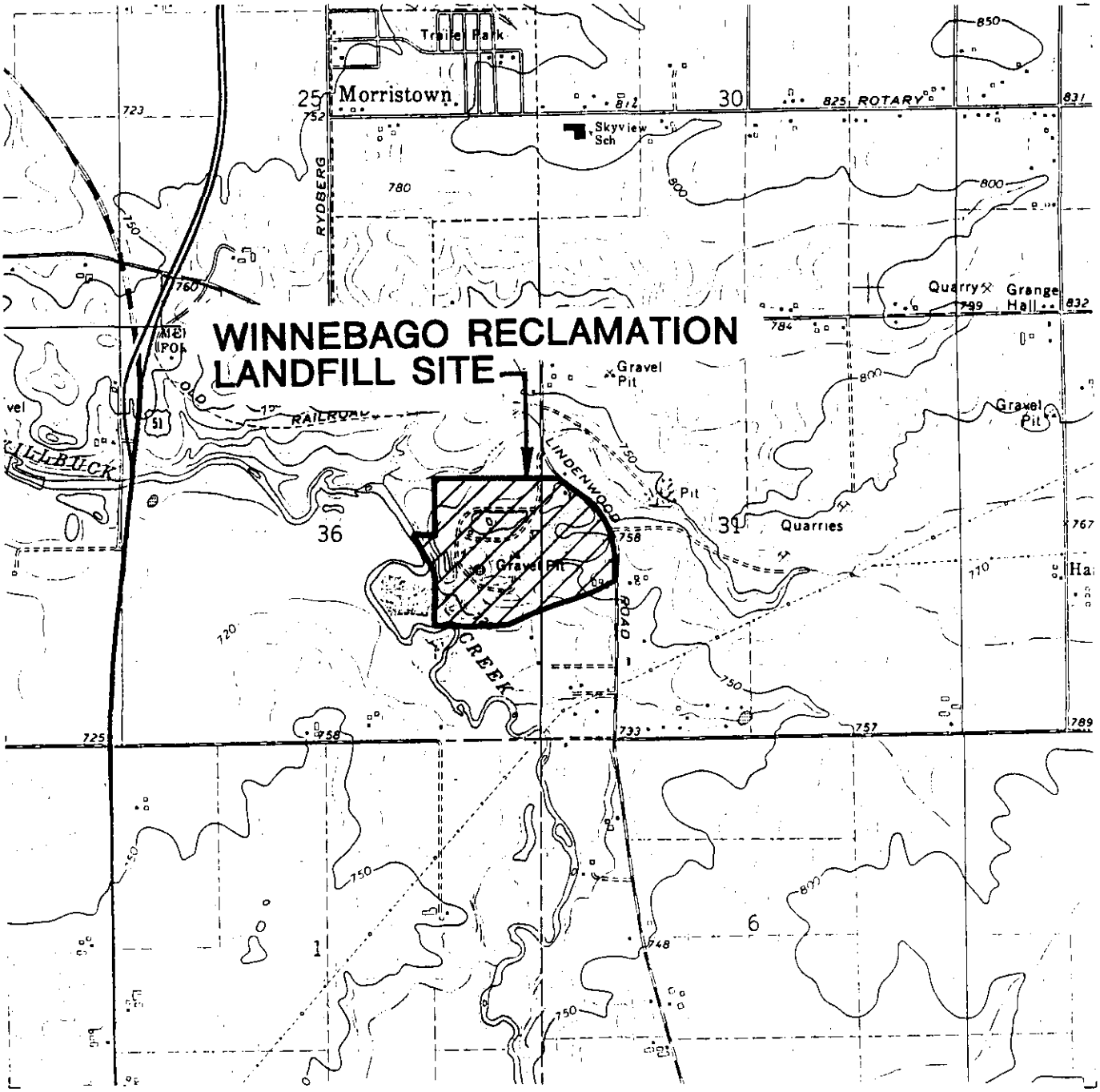
FIGURES



NOTES

1. BASE MAP DEVELOPED FROM THE ROCKFORD SOUTH, ILLINOIS 7.5 MINUTE USGS TOPOGRAPHIC QUADRANGLE MAP DATED 1971, PHOTOREVISED 1976.

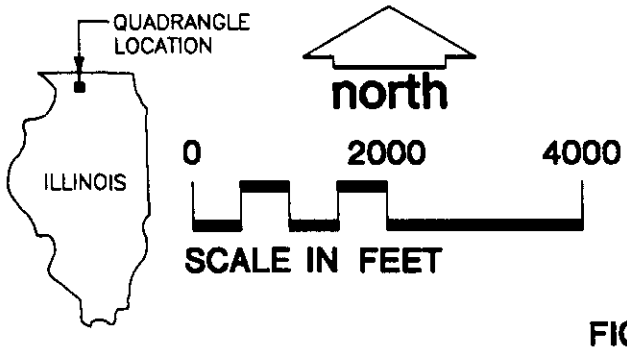


FIGURE 1

Developed By: CWB Drawn By: ELR

Approved By: Gary E. Tauber Date: 2/10/93

Reference:

Revisions:

SITE LOCATION MAP

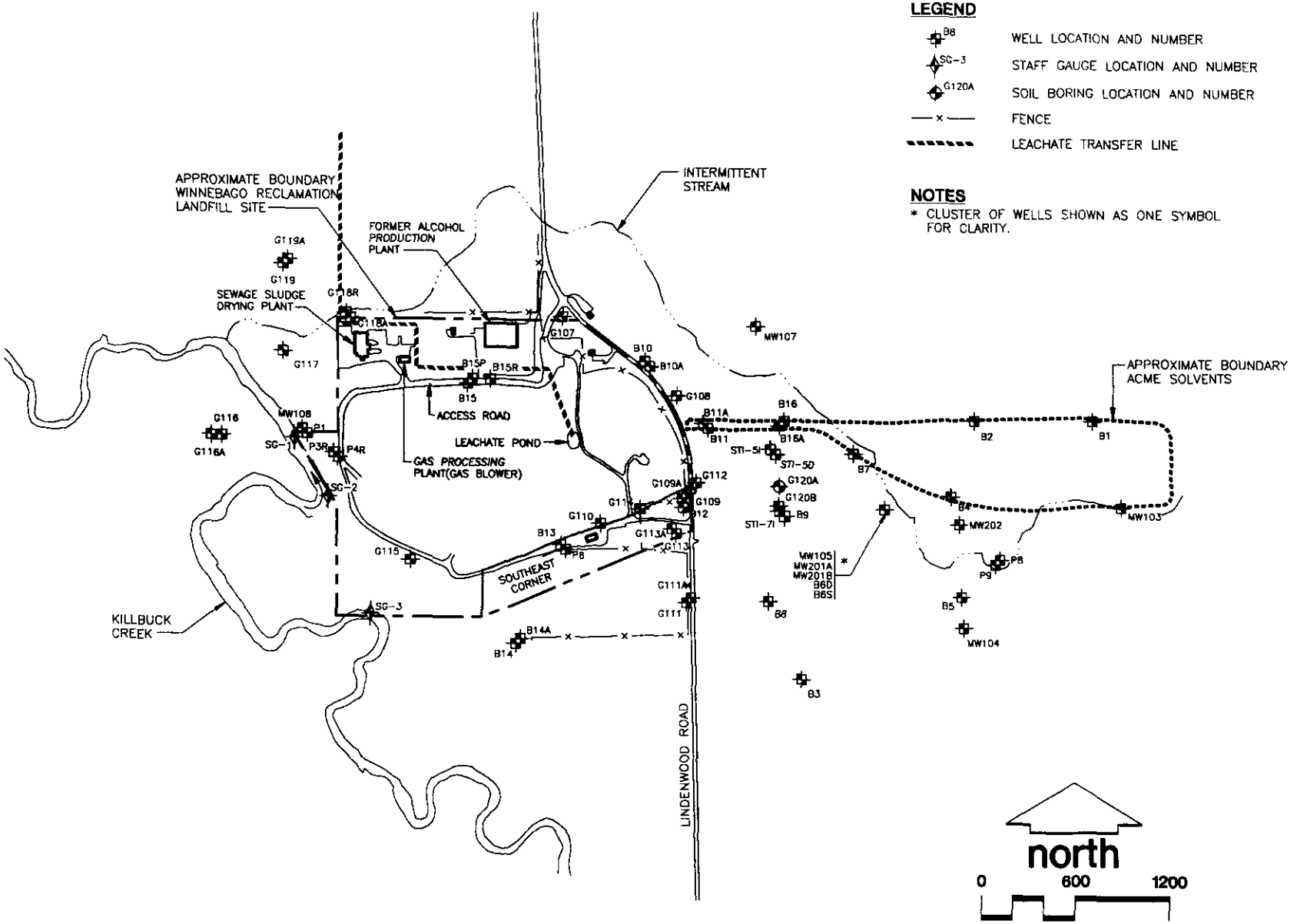
RD/RA WORK PLAN
WINNEBAGO RECLAMATION LANDFILL SITE
WINNEBAGO COUNTY, ILLINOIS

Drawing Number
10009711 A1

WARZYN

WARZYN INC.

Management Review | Other
cal Review | Project Manager
Graphic Standards | Lead Professional
ALITY CONTROL



LEGEND

- B8 — WELL LOCATION AND NUMBER
- SG-3 — STAFF GAUGE LOCATION AND NUMBER
- G120A — SOIL BORING LOCATION AND NUMBER
- —x— FENCE
- LEACHATE TRANSFER LINE

NOTES

* CLUSTER OF WELLS SHOWN AS ONE SYMBOL FOR CLARITY.

Developed By: CWB Drawn By: ELR Date: 7/8/93
Approved By: Tom Schmidt
Reference:
Revisions:

SITE FEATURES MAP
RD/RA WORK PLAN
WINNEBAGO RECLAMATION LANDFILL SITE
WINNEBAGO COUNTY, ILLINOIS

Drawing Number
10009711 B1

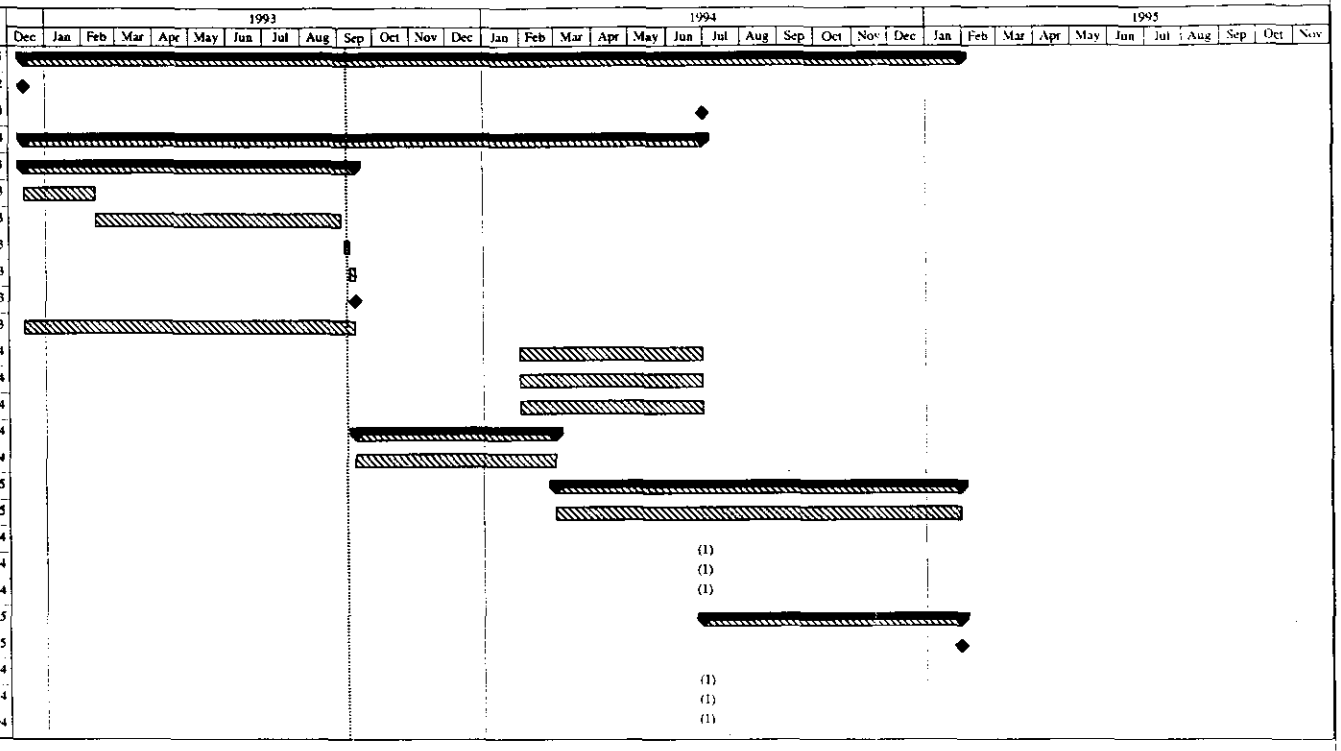
WARZYN

QUALITY CONTROL: Graphic Standards | Lead Professional | Technical Review | Project Manager | Management Review | Other

WARZYN INC.

FIGURE 3 PROJECT SCHEDULE
WRL Remedial Design/Remedial Action
Winnebago Reclamation Landfill Inc.

ID	Name	Duration	Start	Finish
1	WRL REMEDIAL DESIGN AND REMEDIAL ACTION	777ed	12/14/92	1/30/95
2	U.S. EPA Authorization to Proceed	0d	12/14/92	12/14/92
3	Projected 25% of Surface Area at Final Elevation	0d	6/30/94	6/30/94
4	Work Plan/Planning Documents	563ed	12/14/92	6/30/94
5	RD/RA Work Plan Preparation	275ed	12/14/92	9/15/93
6	Draft RD/RA Work Plan Preparation	60ed	12/14/92	2/12/93
7	U.S. EPA Review/Revisions to Draft Work Plan	203ed	2/12/93	9/3/93
8	Final RD/RA Work Plan Preparation	4ed	9/6/93	9/10/93
9	U.S. EPA Review of Final Work Plan	5ed	9/10/93	9/15/93
10	U.S. EPA Approval of Final RD/RA Work Plan	0d	9/15/93	9/15/93
11	Groundwater Extraction and Treatment System	275ed	12/14/92	9/15/93
12	Final Cover System	150ed	1/31/94	6/30/94
13	Landfill Gas Management System	150ed	1/31/94	6/30/94
14	Leachate Management System	150ed	1/31/94	6/30/94
15	Pre-Design Studies	167ed	9/15/93	3/1/94
16	Groundwater studies	167ed	9/15/93	3/1/94
17	Remedial Design	335ed	3/1/94	1/30/95
18	Groundwater Extraction and Treatment System	335ed	3/1/94	1/30/95
19	Final Cover System	0ed	6/30/94	6/30/94
20	Landfill Gas Management System	0ed	6/30/94	6/30/94
21	Leachate Management System	0ed	6/30/94	6/30/94
22	Remedial Action Construction Begins	214ed	6/30/94	1/30/95
23	Groundwater Extraction and Treatment System	0d	1/30/95	1/30/95
24	Final Cover System	0d	6/30/94	6/30/94
25	Landfill Gas Management System	0d	6/30/94	6/30/94
26	Leachate Management System	0d	6/30/94	6/30/94

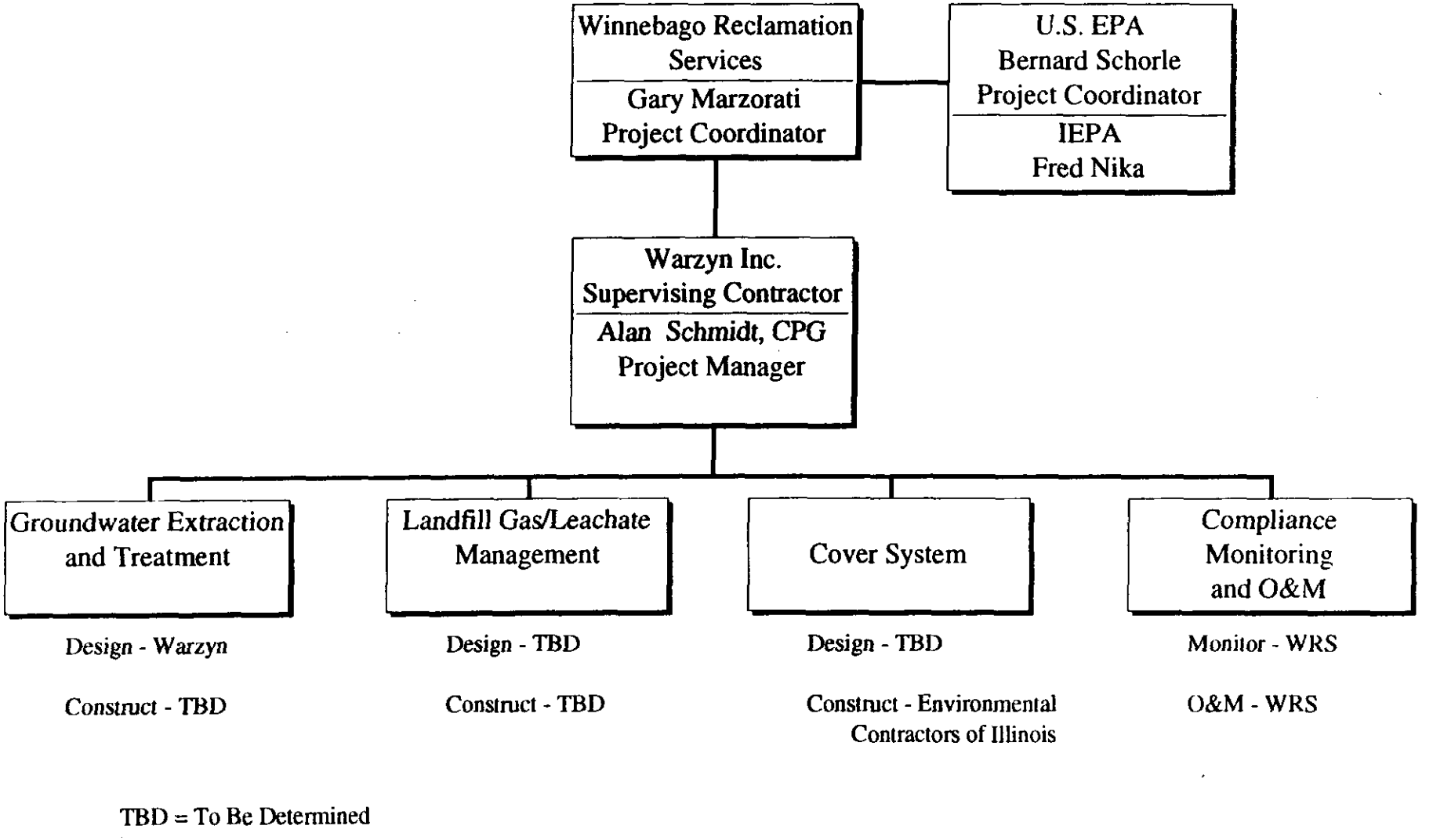


(1) Final cover, Landfill Gas Management System, and Leachate Management System Remedial Actions will be implemented in a time frame which is consistent with site operations and in accordance with existing IEPA Solid Waste Permits.

File Name: WRLRDRA.MPP
Revision Date:9/7/93

Summary ▬▬ Scheduled Activity ▨ Milestone ◆

Project Organization
Winnebago Reclamation Landfill RD/RA



TBD = To Be Determined

Figure 4